IDRC FEATURE

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE
Box 8500, Ottawa, Canada, K1G 3H9 • Telephone (613) 996-2321
• Cable: RECENTRE • Telex: 053-3753

A monthly features service on scientific, technical, and educational subjects pertinent to development.

CANADA

Words: 975 approx.

HELPING MEXICO'S MILK INDUSTRY

by NEIL THOMAS

The Comarca Lagunera in Northern Mexico is not much bigger than the Island of Montreal yet it is the country's principal centre of milk production. Some 90,000 cows produce more than one million litres of milk daily, a large part of which is shipped by road as far south as Mexico City and Acapulco.

La Laguna, as the region is also called, is the extremely arid remains of a prehistoric lake. In spite of the region's very high summer temperatures, cool winters, and very little precipitation, it is an area of intensive forage production. This production, combined with two other major crops, cotton and grapes, results in a prosperity almost unique in Mexico. The traditional forages grown in the region are alfalfa, corn, and sorghum in the summer, and oats in the winter.

Water shortages are becoming noticably more critical each year, however, and the production of forage is insufficient to meet the needs of an ever-increasing cow population. To these problems are added a generally poor knowledge of the principles of feeding for milk production and traditional systems of forage production that are extremely costly.

CIAN, the Centro de Investigaciones Agricolas del Norte, a regional centre of the Instituto Nacional de Investigaciones Agricolas, located just outside the city of Torreon, is expanding its forage research activities in an effort to solve the problems of the milk producers. The research is supported by Canada's International Development Research Centre.

An extremely serious problem in the region is the shortage of water. Annual evaporation is more than five times as high as precipitation, and the

.../2

unpredictability of the rains means that they are ignored in the development of irrigation schedules. As nearly all the water used in forage production is from sub-soil sources, this also means that the water table is falling alarmingly.

A large part of the research effort has therefore been concerned with increasing the efficiency of use of this water in the production of forage. One approach has been to shift the focus of the annual production cycle from summer to winter-growing species.

Considerable success has been achieved with the introduction of a winter-growing annual, Italian ryegrass (*Lolium multiflorum*). Its potential yield reaches three-quarters that of alfalfa, but it requires only a quarter to a third of the water. This species has the added advantage that it leaves the land and water free for summer-growing annuals that are more efficient in their water use than alfalfa. The net result is a forage production sequence that provides more feed at a lower water cost per unit of forage produced.

Crop water needs and the quantity applied in irrigation are not the same, however. The gravity irrigation technique used in the region makes it difficult to apply water at a depth of 10 cm or less (sufficient to recharge the water storage capacity of the root zone of most forage species). To be efficient, this method requires perfect land preparation and the correct relationship between the volume of water available per unit of time and the length of the unit to be irrigated. Poor land preparation is common amongst small landholders, especially those using animal power, and the consequent poor water management is reflected in the lower crop yields. With the gramineous (grass family) species the lower yields are a result of the loss of nitrogenous fertilizer, mainly through leaching.

The technical problems facing the research group are many. At the regional level, poor knowledge of feeding standards for milk production has meant that much information is requested by the farmers that is not available to the research worker. Most farmers will answer "protein" when asked what

is the most important single constituent of a forage intended for a milk animal. The revelation that Italian ryegrass will maintain or boost milk production in comparison with alfalfa -- although it has an appreciably lower crude protein content -- has led to some radical changes in the concept of a high quality forage.

Traditionally, forage research in Mexico has been focused on the animal, an approach that is understandable given the importance of cattle production in the nation's past and present history. The development of a systems approach to forage/animal production has been held back by an insufficient understanding of the basic resource of the system -- the plant itself -- and how the quantity and quality of forage can interact with the animal and result in a profitable or nonprofitable enterprise. One of the objectives of the research is to develop within the research group an awareness of the interactive nature of forage and animals, and the ability to quantify these relationships in such a way that the work will be applicable to the activities carried out in cooperation with the milk producers.

Other forage species are being tested under regional conditions. Germplasm of *Lolium* is being sought from the Mediterranean area, where it is also a winter-growing species, in order to find ecotypes adapted to the high fall and spring temperatures, thus extending the winter growing season. Berseem clover, *Trifolium alexandrinum*, is also being considered as a winter crop, as it has performed well in introductory trials. As well as continuing work with corn and sorghum in an attempt to improve the efficiency of the production and ensiling process, work has also begun with forage sunflowers and with millets in an attempt to further decrease summer water use.

With climatic and economic conditions becoming more difficult, the forage production systems supporting the milk production industry in La Laguna are changing. Already, as much as 50 percent of the forage consumed in the region is produced off the farm. To reduce production costs and increase the biological efficiency of their enterprises, the milk producers require forage production systems tailored to their changing conditions. The research group

in Torreon is responding to these problems, helping to maintain the prosperity of the regional milk industry.

END

IDRC-F104e

March 1979

Neil Thomas is a research advisor with IDRC's Agriculture, Food and Nutrition Sciences Division, based at CIAN, in Mexico.